Check List the journal of biodiversity data

NOTES ON GEOGRAPHIC DISTRIBUTION

Check List 13(2): 2074, 28 March 2017 doi: https://doi.org/10.15560/13.2.2074
ISSN 1809-127X © 2017 Check List and Authors

First record of *Beierochelifer* Mahnert, 1977 (Pseudoscorpiones: Cheliferidae) from Slovakia

Katarína Krajčovičová[1] & **Jana Christophoryová**

Comenius University, Faculty of Natural Sciences, Department of Zoology, Mlynská dolina, Ilkovičova 6, SK 842 15 Bratislava, Slovakia
[1] Corresponding author. E-mail: krajcovic.katarina@gmail.com

Abstract: *Beierochelifer peloponnesiacus peloponnesiacus* (Beier, 1929) is recorded for the first time from Slovakia. These records are based on two males found in tree microhabitats at two localities, both with forest-steppe character with xerothermic vegetation. A full description of the specimens of this rare subspecies is provided and the main diagnostic characters are discussed.

Key words: Europe; new record; taxonomy; tree bark; tree hollow

The genus *Beierochelifer* Mahnert, 1977, established for *Rhacochelifer anatolicus* (Beier, 1949), is represented in the Turano-Mediterranean area by three species (Figure 1): *B. geoffroyi* Heurtault, 1981 (southern France), *B. anatolicus* (Turkey and Greece), *B. peloponnesiacus peloponnesiacus* (Beier, 1929) (Italy, Bulgaria, Greece and Azerbaijan), and *B. p. jonicus* (Beier, 1932) (Greece and Turkey) (Harvey 2013). The genus *Beierochelifer* is related to *Rhacochelifer*, from which it differs chiefly by the absence of coxal sacks in males, the shape of genital structures in both sexes, and the presence of smooth subterminal setae on tarsi I in males (Mahnert 1977).

During the study of pseudoscorpions inhabiting tree habitats, two specimens belonging to a species unknown for the fauna of Slovakia were collected. The specimens were identified as the noninotypical subspecies of the rare *Beierochelifer peloponnesiacus*. A detailed description of examined specimens is done.

One male of *B. p. peloponnesiacus* was found under bark of *Quercus cerris* L., Drastavica, 26.VI.2012, 48°25′54.4″ N, 018°43′33.0″ W, V. Franc leg. (Figure 2). One male was extracted from mould in tree hollow of *Q. cerris*, Ľútovský Drieňovec, 25.VIII.2012, 48°48′04.7″ N, 018°15′41.7″ W, O. Majzlan leg. Both localities have a forest-steppe character with xerothermic vegetation (Figure 2). For identification, the palp, leg I, and leg IV were removed from the left side of the bodies. The body parts were mounted as permanent slide mounts in Swann's fluid as the medium. Specimens were photographed using a Leica DM1000 compound microscope with ICC50 Camera Module (LAS EZ application, 1.8.0). Measurements were taken from photographs using the AxioVision 40LE application (v. 4.5). Figure of tarsus of leg I was drawn using a Leica drawing tube. The specimens were compared to the syntypes of *B. peloponnesiacus* from Koumanis, Peloponnese (Greece) in the Natural History Museum in Vienna. Dr. V. Mahnert (Geneva, Switzerland) confirmed the identification. Nomenclature follows Harvey (2013). The material is deposited in the zoological collections of Slovak National Museum (Bratislava) (voucher numbers: SZ 10880, SZ 10881).

The genus *Beierochelifer* is characterized in the following combination of characters (Mahnert 1977): abdominal pleural membrane longitudinally striate (Figure 3); palps robust, femur extend abrupt from pedicel (Figure 4); chelal fingers clearly shorter than hand (Figure 4); tarsus of leg I modified in males with smooth acuminate subterminal seta and asymmetric claws (Figure 5); tarsus of leg IV without tactile seta.

Beierochelifer peloponnesiacus peloponnesiacus
(Beier, 1929)

Beierochelifer peloponnesiacus differs from other *Beierochelifer* species chiefly by the shape of male tarsus of leg I, with dorso-distal strong projection (Figure 5), and larger palpal size (Table 1) (Beier 1949, 1963; Heurtault 1981).

The subspecies *B. p. peloponnesiacus* is very similar to *B. p. jonicus* (Beier 1963). According to Beier (1963), both subspecies can be distinguished by measurements of the palpal segments. *Beierochelifer p. jonicus* shows narrower palpal femur (2.5–2.6 × longer than broad) and patella (2.2. times) than nominate subspecies (femur 2.2–2.6 ×, patella 2.0–2.2 × longer than broad).

The following characters were observed in Slovakian specimens:

Carapace with 78–81 setae, 39–41 of which distal of the anterior transverse furrow and 26–28 on medial disk, posterior margin with 11–14 setae; carapace with 11–14

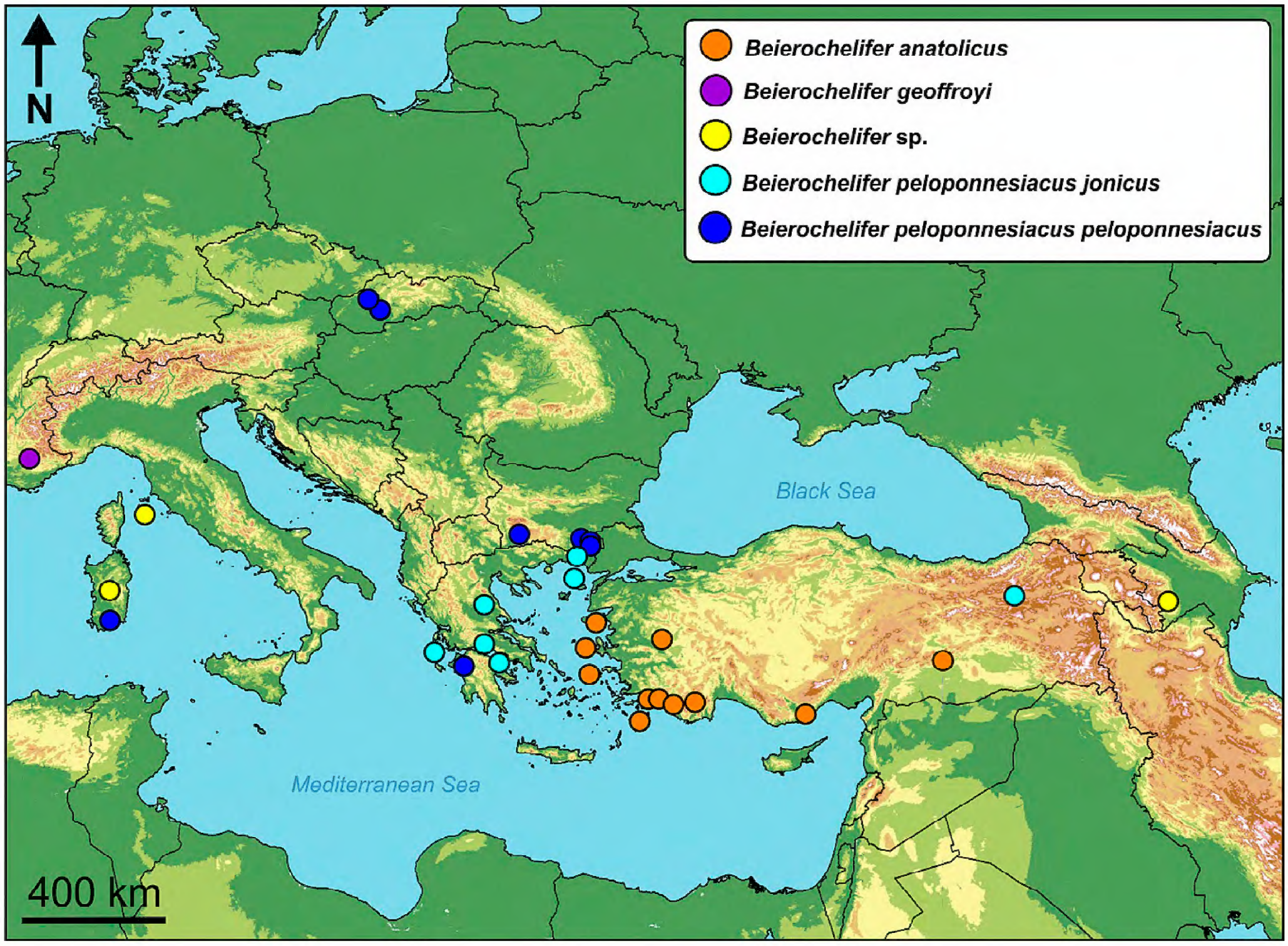
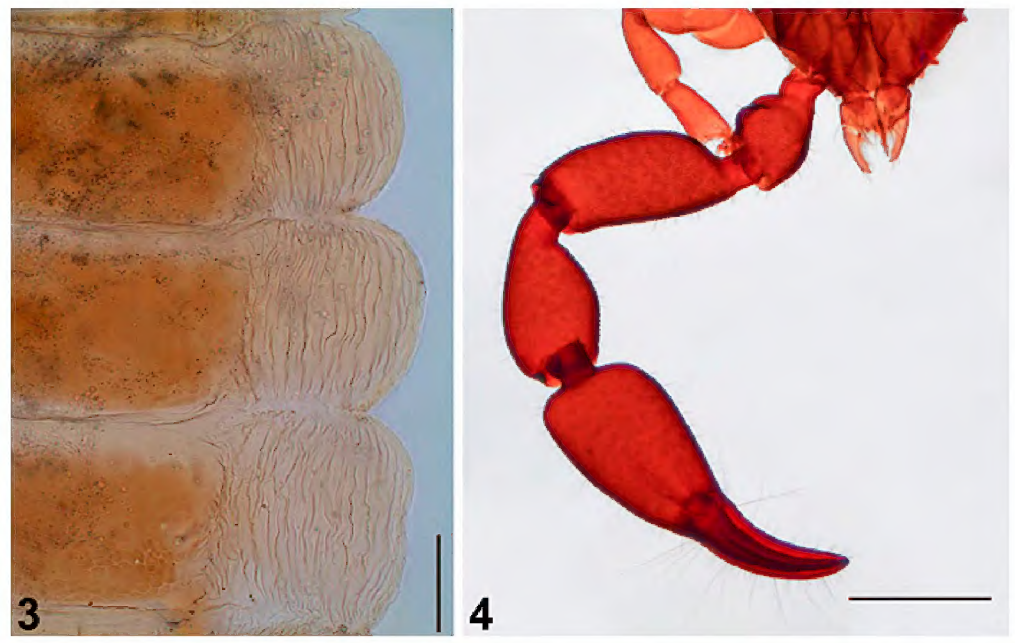


Figure 1. Distribution map of *Beierochelifer* species (Beier 1929, 1932a, 1932b, 1949, 1957; Mahnert 1977; Callaini 1983a, 1983b; Gardini 1985; Schawaller & Dashdamirov 1988; Petrov 2004; Kunt et al. 2008).

Figure 2. Xerothermic vegetation with *Quercus cerris* at Drastavica, Slovakia.



Figures 3, 4. Male of *Beierochelifer p. peloponnesiacus*. **3.** Detail of abdominal pleural membrane. Scale: 0.1 mm. **4.** Palp. Scale: 0.5 mm.

lyrifissures, 7–8 of which on posterior carapace margin. Cheliceral hand with 5 setae (*es*, *is*, *ls* – smooth; *b*, *sb* – finely dentate), movable finger with one smooth seta (*gs*); galea with 4 or 5 short subterminal rami; serrula exterior with 19, rallum with 3 blades (distal one dentate). Fixed and movable chelal fingers respectively with 31–35 and 32 marginal teeth.

Chaetotaxy of tergites (right+left hemitergites) I–XI: 6–7+5–6, 5–7+5–8, 6+5–7, 6–8+6–9, 8+8–9, 7–10+8–10, 8–9+7–9, 8–9+8–9, 8–9+7, 6–8+6–8, 5+5 and a pair of subtactile setae.

Chaetotaxy of sternites (right+left hemisternites) IV–XI: 6+5–6, 6+5–7, 8+7–8, 7–8+6–8, 6–8+7, 5–7+7–9, 6–8+5–8, 5+5 and a pair of subtactile setae.

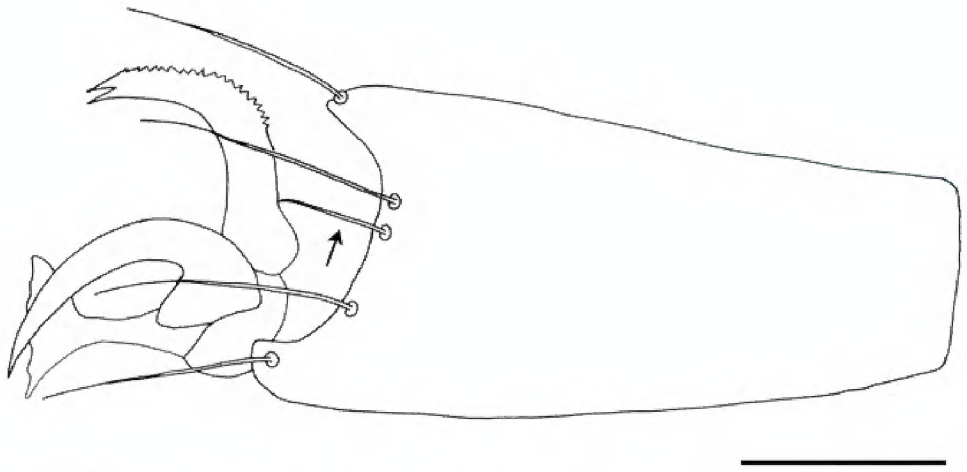


Figure 5. Modified tarsus of leg I of *Beierochelifer p. peloponnesiacus* male. Arrow points to subterminal seta. Scale: 0.1 mm.

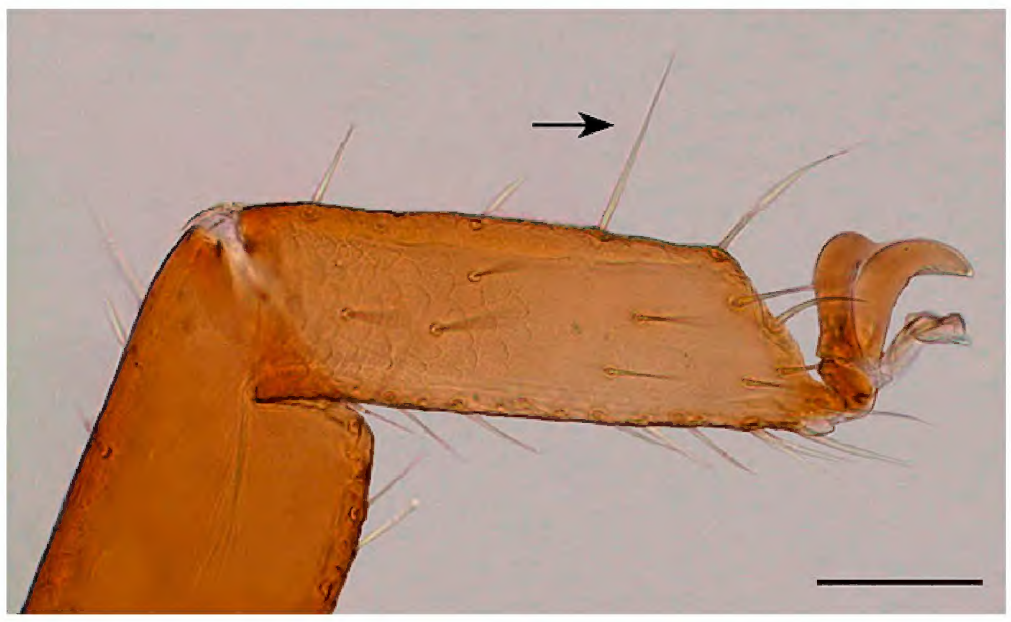


Figure 6. Tarsus of leg IV of *Beierochelifer p. peloponnesiacus* male. Arrow points to tactile seta situated distal in one third of tarsus. Scale: 0.1 mm.

Genital area: anterior genital operculum with 41 acuminate setae and 4 lyrifissures, posterior genital operculum with 12–14 acuminate setae, without lyrifissures.

A short acute tactile seta (as long as the depth of tarsus or indistinctly longer) present on tarsus IV situated approximately ⅔ from the joint with the tibia (Figure 6).

Measurements of both males are given in Table 1.

The subspecies *B. p. peloponnesiacus* is thought to live under tree bark (Beier 1963). However, Beier (1929, 1932a, 1932b) and Gardini (1985) did not mention the habitat type. Petrov (2004) collected specimens under tree bark, near a stone quarry and in *Quercus* litter in Bulgaria. Both newly found specimens in Slovakia were collected in tree microhabitats, though one specimen was found in mould of tree hollow.

Measurements from published data (Beier 1929, 1932b, 1963; Petrov 2004) and from the Slovak specimens (Table 1) shows that the length of palpal femur of *B. p. peloponnesiacus* is never longer than 0.90 mm (Table 1) in contrast to *B. p. jonicus*. Nevertheless, the differences between the subspecies are really inconsistent and rarely discriminates sexes. Both subspecies are present in the same area and the differences can be caused by missing data (Gardini 1985; Petrov 2004). Petrov (2004) noticed short, but obvious tactile seta present on tarsus IV, which is not mentioned in original description of the genus (Mahnert 1977) but which is recorded in original description of *Chelifer peloponnesiacus* Beier (1929). A short acute tactile seta is present on tarsus IV in both specimens found in Slovakia (Figure 6).

New find of the rare *B. p. peloponnesiacus* extends our knowledge about its distribution. These Slovak records represent the northernmost occurrences of the genus (Figure

Table 1. Morphometric data for examined males of *Beierochelifer p. peloponnesiacus* (measurements in mm).

Character	Male	Male
Body length	2.86	2.80
Carapace length	0.94	0.81
Carapace anterior margin length	0.70	0.59
Carapace posterior margin length	1.06	0.98
Carapace length/posterior margin width ratio	0.89	0.83
Chelicera length	0.30	0.28
Chelicera width	0.15	0.14
Chelicera length/width ratio	2.00	2.00
Chelicera movable finger length	0.21	0.20
Palp trochanter length	0.49	0.45
Palp trochanter width	0.33	0.29
Palp trochanter length/width ratio	1.48	1.55
Palp femur length	0.89	0.77
Palp femur width	0.34	0.31
Palp femur length/width	2.62	2.48
Palp patella length	0.75	0.71
Palp patella width	0.38	0.31
Palp patella length/width ratio	1.97	2.29
Palp hand with pedicel length	0.83	0.75
Palp hand without pedicel length	0.73	0.67
Palp hand width	0.45	0.40
Palp hand length/width ratio	1.84	1.88
Palp movable finger length	0.67	0.59
Palp chela length	1.42	1.25
Palp chela length/hand width ratio	3.16	3.13
Leg I trochanter length	0.23	0.18
Leg I trochanter depth	0.17	0.16
Leg I trochanter length/depth ratio	1.35	1.13
Leg I femur length	0.28	0.28
Leg I femur depth	0.20	0.20
Leg I femur length/depth ratio	1.40	1.40
Leg I patella length	0.43	0.41
Leg I patella depth	0.20	0.19
Leg I patella length/depth ratio	2.15	2.16
Leg I tibia length	0.37	0.35
Leg I tibia depth	0.15	0.14
Leg I tibia length/depth ratio	2.47	2.50
Leg I tarsus length	0.35	0.33
Leg I tarsus depth	0.15	0.15
Leg I tarsus length/depth ratio	2.33	2.20
Leg IV trochanter length	0.28	0.28
Leg IV trochanter depth	0.18	0.18
Leg IV trochanter length/depth ratio	1.47	1.56
Leg IV femoropatella length	0.83	0.73
Leg IV femoropatella depth	0.33	0.29
Leg IV femoropatella length/depth ratio	2.52	2.52
Leg IV tibia length	0.63	0.56
Leg IV tibia depth	0.18	0.17
Leg IV tibia length/depth ratio	3.50	3.29
Leg IV tarsus length	0.39	0.39
Leg IV tarsus depth	0.11	0.11
Leg IV tarsus length/depth ratio	3.55	3.55

1). At the same time, they represent the first records of the genus in Slovakia.

ACKNOWLEDGEMENTS

We are grateful to Oto Majzlan and Valerián Franc for collecting of pseudoscorpions used in this paper. Special thank belongs to Dr. Volker Mahnert for checking and confirming the identification and for his help with this paper. We are grateful to Christoph Hörweg for help with literature, as well as to Alica Christophory, Daniel Gruľa and Daniel Jablonski for technical assistance with figures. We would like to thank Giulio Gardini and one anonymous reviewer for their beneficial corrections and comments that improved our manuscript. The study was financially supported by the project VEGA 1/0191/15.

LITERATURE CITED

Beier, M. 1929. Die Pseudoskorpione des Wiener Naturhistorischen Museums. II. Panctenodactyli. Annalen des Naturhistorischen Museums in Wien 43: 341–367.

Beier, M. 1932a. Zur Kenntnis der Cheliferidae (Pseudoscorpionidea). Zoologischer Anzeiger 100: 53–67.

Beier, M. 1932b. Pseudoscorpionidea II. Subord. C. Cheliferinea. Tierreich 58: i–xxi, 1–294.

Beier, M. 1949. Türkiye Psevdoscorpion'lari hakkinda. Türkische Pseudoscorpione. Revue de la Faculté des Sciences de l'Université d'Istanbul (B) 14: 1–20.

Beier, M. 1957. Pseudoscorpione gesammelt von Dr. K. Lindberg 1956. Förhandlingar vid Kungliga Fysiografiska Sällskapets i Lund 27: 145–151.

Beier, M. 1963. Ordnung Pseudoscorpionidea (Afterskorpione). In Bestimmungsbücher zur Bodenfauna Europas, vol. 1. Akademie-Verlag: Berlin. 313 pp.

Callaini, G. 1983a. Notulae Chernetologicae XII. Nuovi reperti sugli pseudoscorpioni della Sardegna. Lavori della Società Italiana di Biogeografia 8: 279–322.

Callaini, G. 1983b. Pseudoscorpioni dell'isola di M ontecristo (Arachnida). Notulae Chernetologicae IX. Redia 66: 147–165.

Gardini, G. 1985. Segnalazioni faunistiche Italiane. Bollettino della Società Entomologica Italiana 117: 60–61.

Harvey, M.S. 2013. Pseudoscorpions of the world, version 3.0. Perth: Western Australian Museum. Accessed at http://museum.wa.gov.au/catalogues-beta/pseudoscorpions/, 3 March 2017.

Heurtault, J. 1981. Présence et signification dans la France méditerranéenne des espèces des genres *Beierochelifer*, *Cheirochelifer* et *Calocheiridius* (Arachnides, Pseudoscorpions). Atti della Società Toscana di Scienze Naturali, Memorie, Serie B 88: 209–222.

Kunt, K.B., Bayram, A., Yağmur, E.A. & T. Danişman. 2008. Checklist of the pseudoscorpions of Turkey (Pseudoscorpionida; Arachnida). Turkish Journal of Arachnology 1(1): 70–84.

Mahnert, V. 1977. Über einige Atemnidae und Cheliferidae Griechenlands (Pseudoscorpiones). Mitteilungen der Schweizerischen Entomologischen Gesellschaft 50: 67–74.

Petrov, B.P. 2004. The false scorpions (Arachnida: Pseudoscorpiones) of the Eastern Rhodopes (Bulgaria and Greece). pp. 153–166, in: P. Beron & A. Popov (eds.). Biodiversity of Bulgaria. 2. Biodiversity of Eastern Rhodopes (Bulgaria and Greece). Sofia: Pensoft and National Museum of Natural History.

Schawaller, W. & S. Dashdamirov. 1988. Pseudoskorpione aus dem Kaukasus, Teil 2 (Arachnida). Stuttgarter Beiträge zur Naturkunde (A) 415: 1–51.

Authors' contributions: JC obtained the specimens, checked the text and elaborated the figures; KK identified and described the specimens, wrote the text and elaborated the figures.

Received: 11 December 2016
Accepted: 14 March 2017
Academic editor: Alireza Zamani